

PATENT CLAIMS

1. A method for controlling the output of a wind power plant comprising a converter unit, characterised in that when the output power of the converter unit is within a given range, the pitch angle of the rotor blades is changed with respect to minimising variations in the thrust of the rotor blades in the wind direction individually or collectively, and when the output power of the converter is outside this range, the pitch angle of the rotor blade is changed with respect to bringing the output within the range.
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2. A method according to claim 1, characterised in that minimising variations in the thrust of the rotor blades in the wind direction is done by regulating towards a calculated target value for the thrust of the rotor blades in the wind direction, the target value for the thrust in the wind direction being different for different average wind velocities.
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3. A method according to claim 2, characterised in that the target value for the thrust of the rotor blades in the wind direction is adjusted in relation to average converter unit output or rotor speed over a given period of time.
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4. A method according to claim 2, characterised in that the target value for the thrust of the rotor blades in the wind direction is predefined and related to given average wind velocities.
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5. A method according to claim 1, characterised in that the thrust of the rotor blades in the wind direction is in addition adjusted by changing the rotor rpm by adjusting the generator rotation resistance moment and/or rotor brakes.
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6. A method according to claim 1, characterised in that the momentary thrust of the rotor blades in the wind direction can be determined directly or indirectly by means of strain gauges, wind velocity measurements, by measuring geometric deflection of the blades, measuring the generator torque and/or measuring the generator output together with simultaneous measurement of the pitch angles of the blade or blades, and/or by measuring or using the pitch moment of the blades about the rotational axis of the pitch bearing either by mounting the blades leaning backwards in the pitch bearing, or by shaping the blades so that the impact point on the blade is behind the rotational axis of the pitch bearing in relation to the rotational direction of the rotor.
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7. A method according to claim 1, characterised in that the pitch angle of the rotor blades is in addition changed with respect to minimising direction errors for the wind power plant.

8. A method according to claim 7, characterised in that the direction error is corrected if it is outside a given range.

9. A method according to claim 1, characterised in that the pitch angle of the rotor blades is adjusted differently for different rotational positions.

10. A method according to claim 1, characterised in that the pitch angles of the rotor blades are adjusted individually and/or independent of each other.

11. A method according to claim 1, characterised in that the wind field in a plane that is substantially perpendicular to the wind direction is predicted by using directly or indirectly measured values of the wind forces acting on the rotor blade or blades that is/are at the front in relation to the rotational direction of the rotor.

12. A method according to claim 1, characterised in that the thrust of the rotor blades in the wind direction is used actively to counter motions of the wind power plant tower by regulating the pitch angles of the rotor blades.